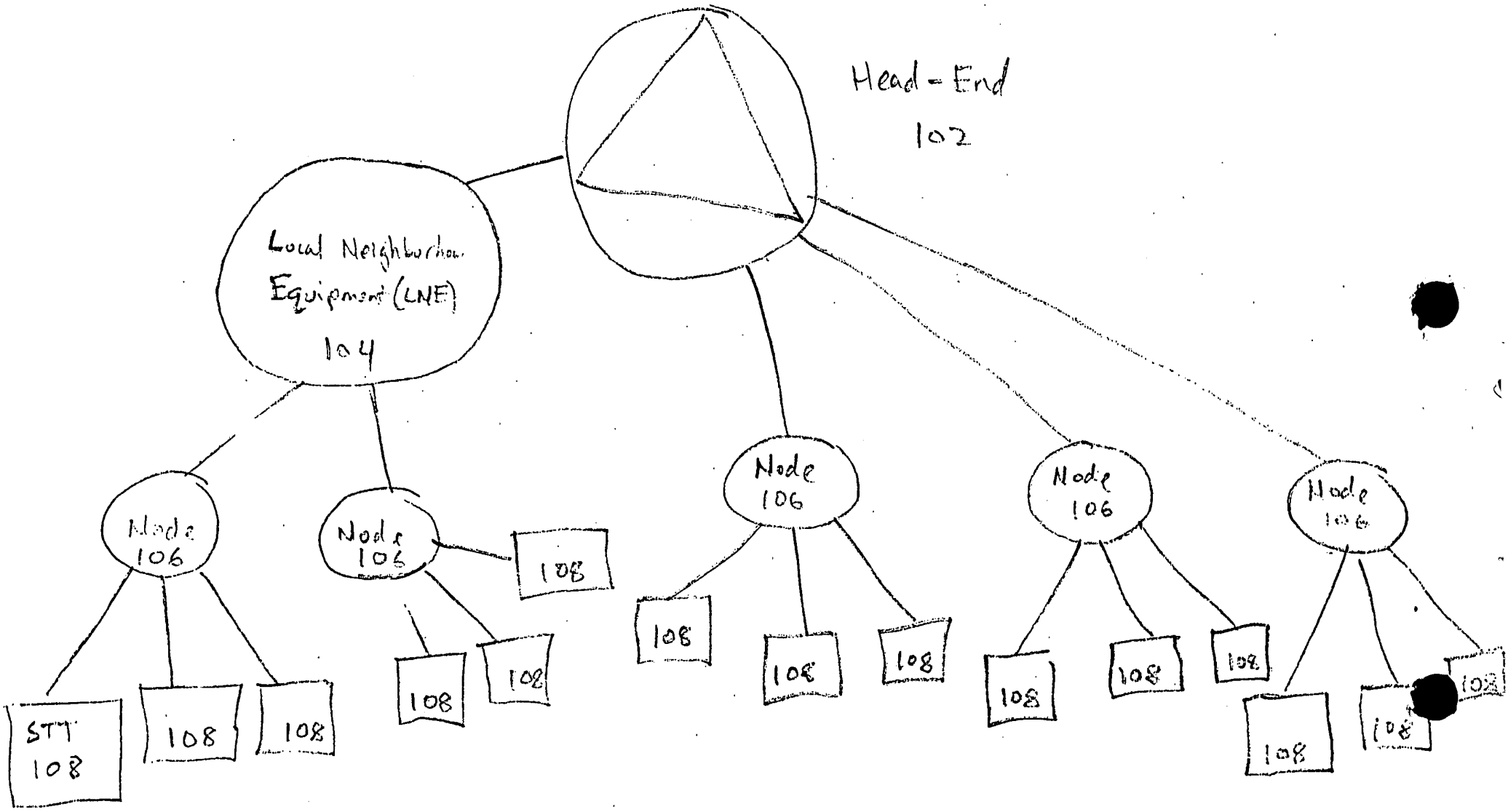
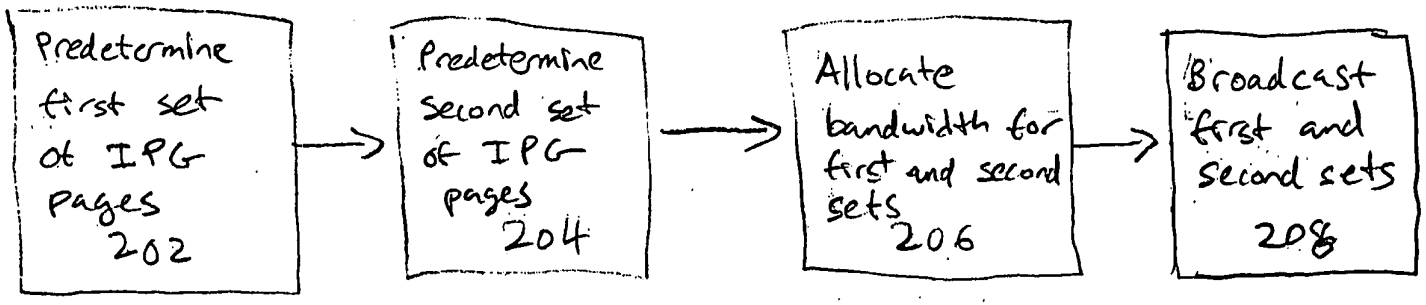
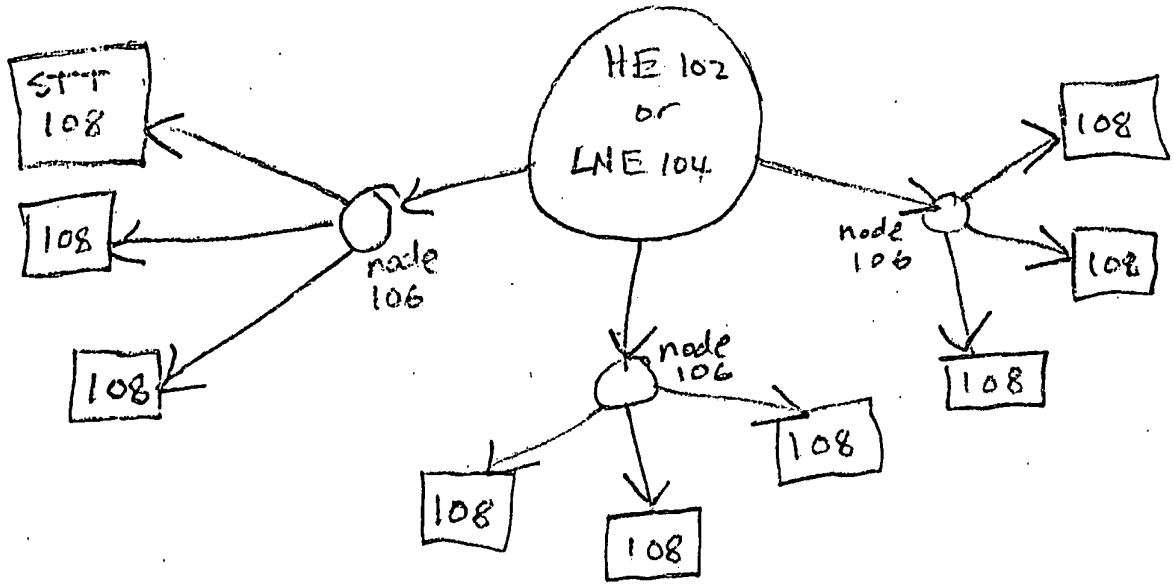

Head-End
102
Local Neighborhood Equipment (LNE)
104
Node 106
Node 106
Node 106
Node 106
Node 106
STT 108
108
108
108
108
108
108
108
108
108
108
108
108
108
108
108

Fig. 1 100



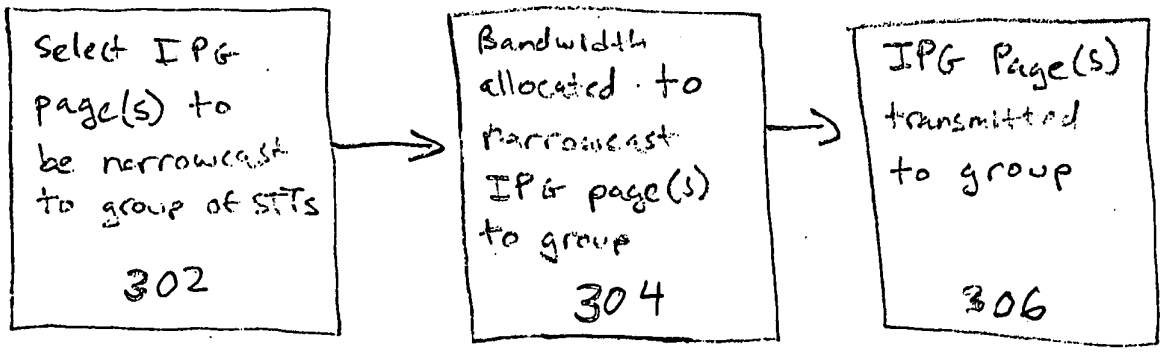
First Push Demandcast (Broadcast) Method 200

Fig. 2A



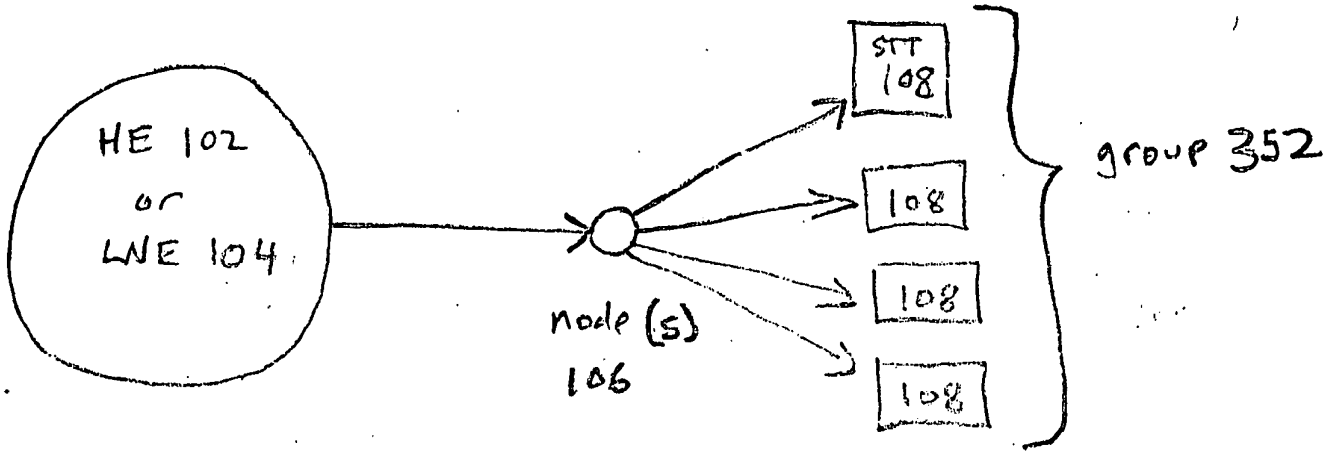
First Push Demandcast (Broadcast) Topology 250

Fig. 2B



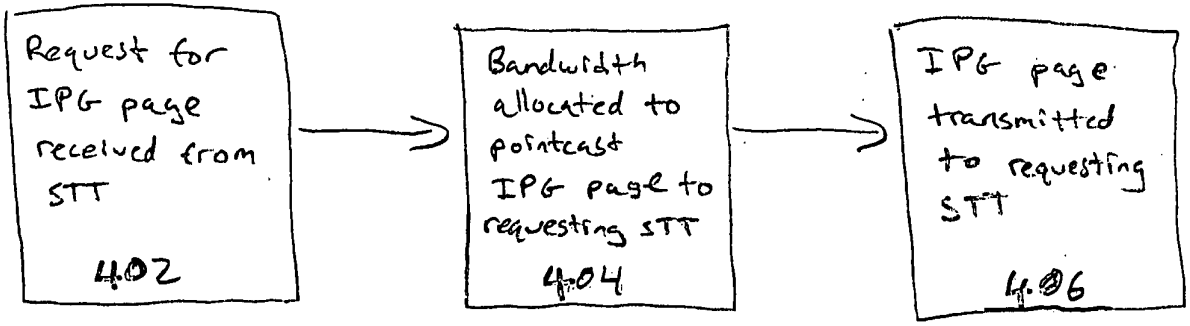
Second Push Demandcast (Narrowcast) method 300

Fig. 3A



Second Push Demandcast (Narrowcast) Topology 350

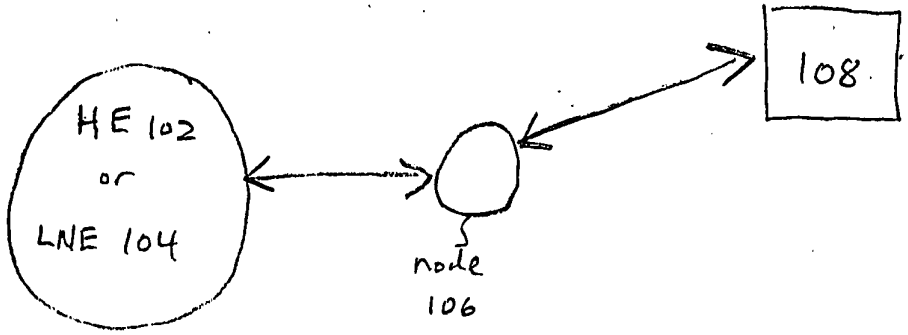
Fig. 3B



First Pull Demandcast (pointcast) method

400

Fig. 4A



First Pull Demandcast (pointcast) Topology

450

Fig. 4B

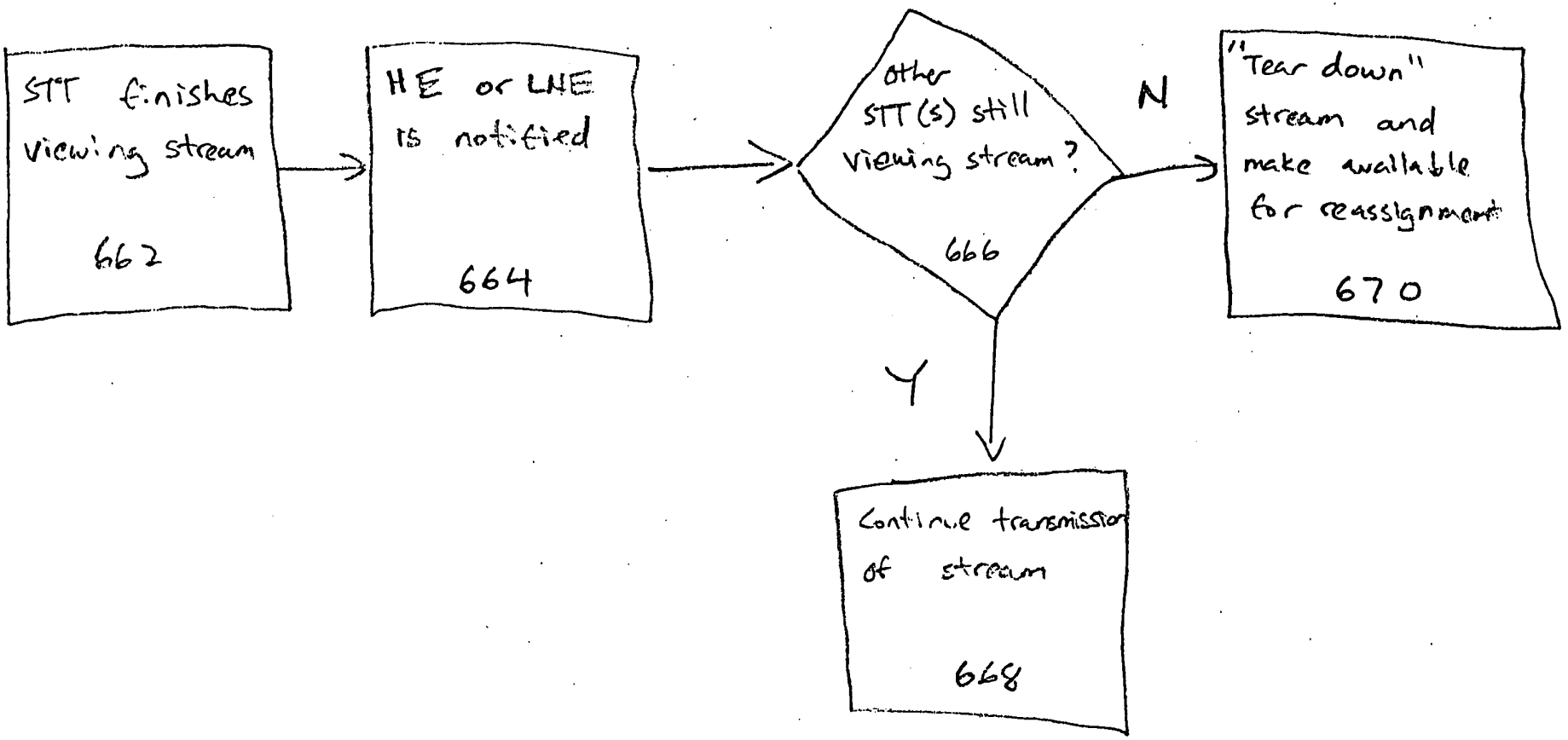
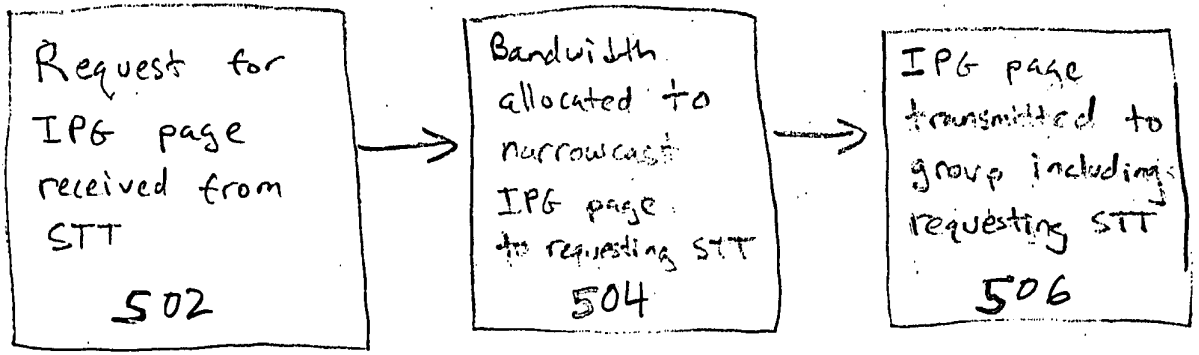

STT finishes viewing stream
662
HE or LHE is notified
664
Other STT(s) still viewing stream?
666
N
"Tear down" stream and make available for reassignment
670
Y
Continue transmission of stream
668

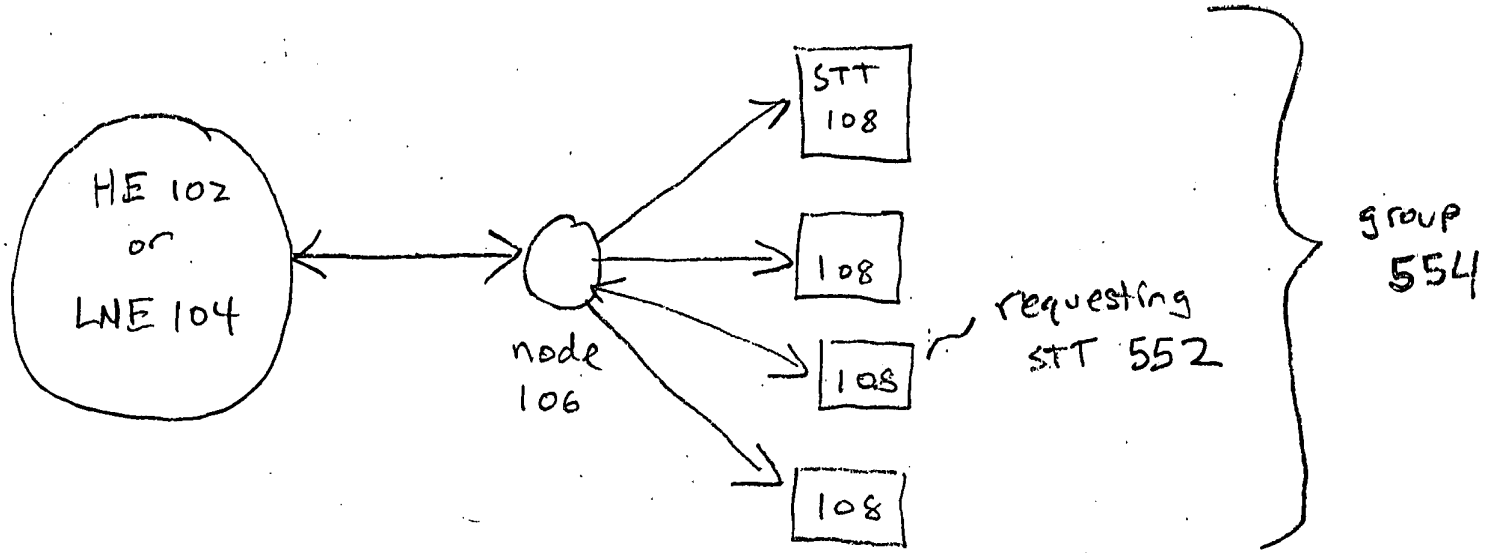
Fig. 6C

660



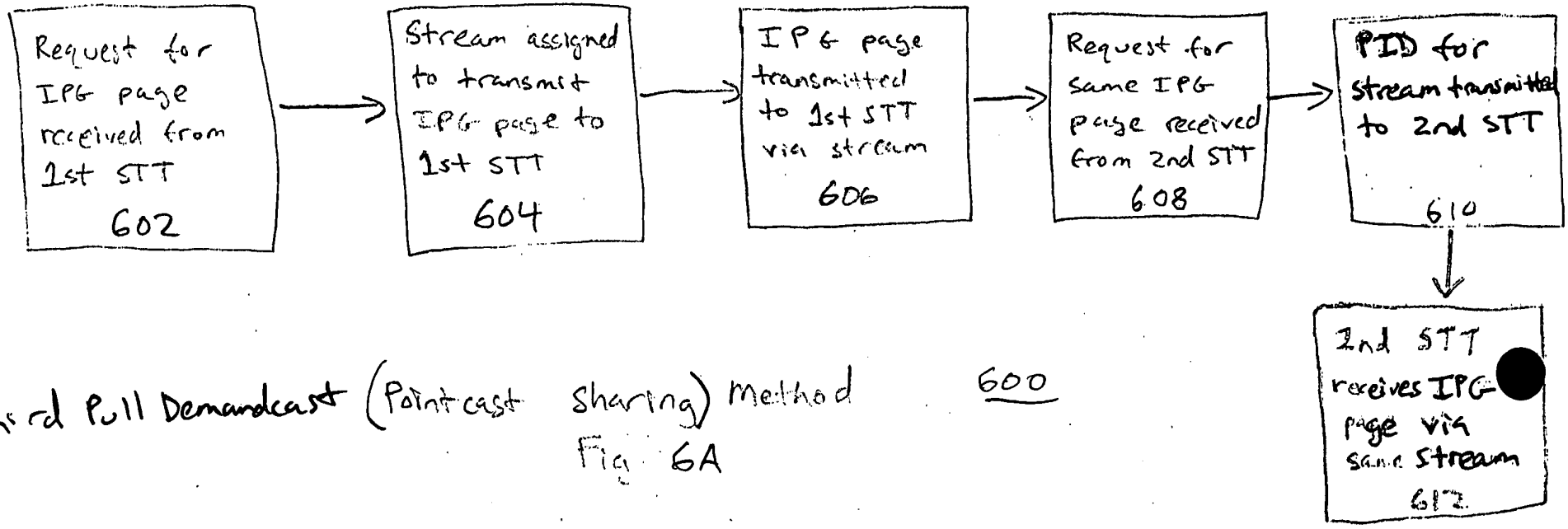
Second Pull Demandcast (Narrowcast) method 500

Fig. 5A



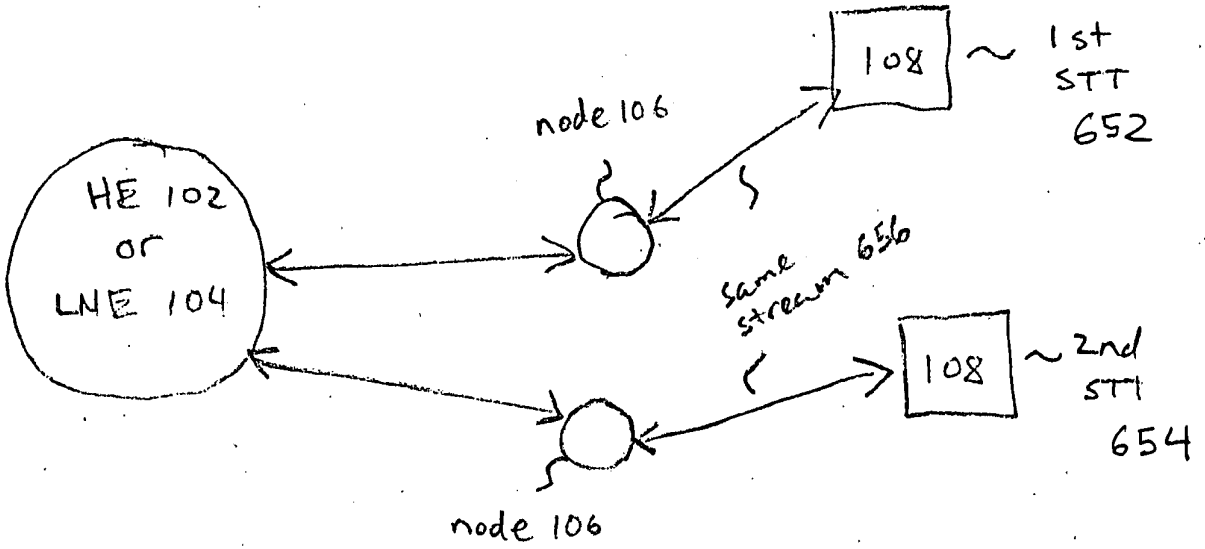
Second Pull Demandcast (Narrowcast) Topology 550

Fig. 5B



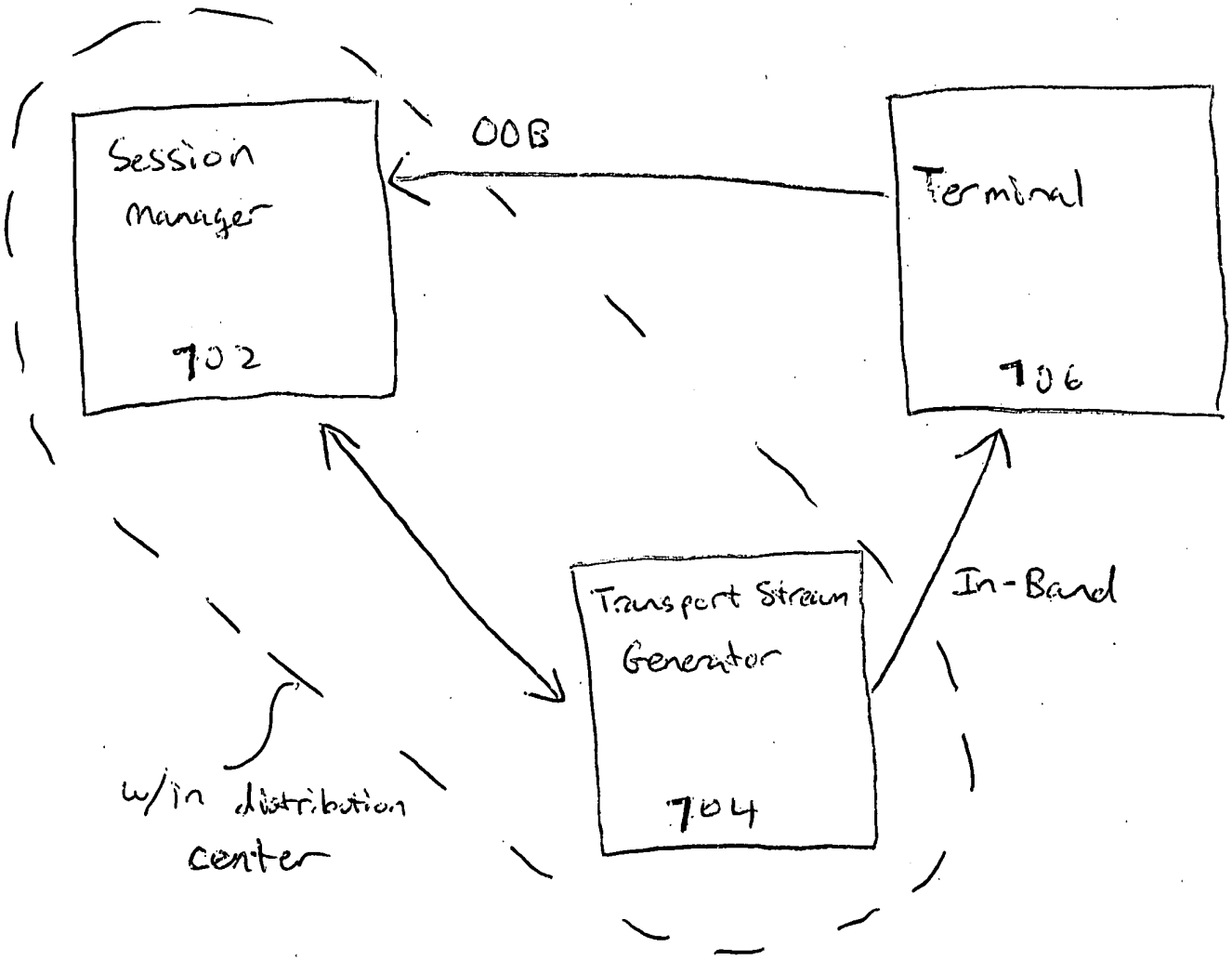
Third Pull Demandcast (Point cast Sharing) Method 600

Fig. 6A



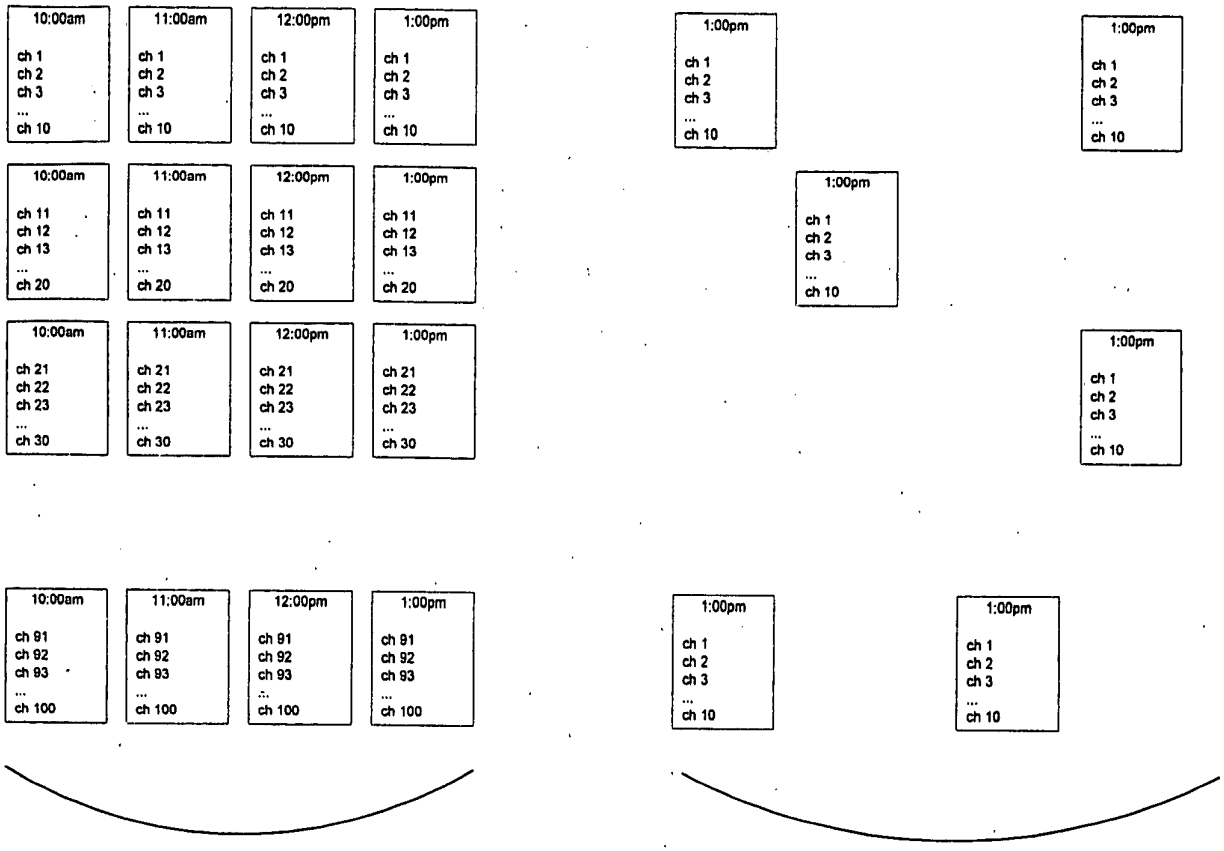
Third Pull Demandcast (Point cast Sharing) Topology 650

Fig. 6B


Session Manager
702
OOB
Terminal
706
Transport Stream Generator
704
In-Band
w/in distribution center

100

Fig. 7



Constant Broadcast Pages = 40 pages.
Pages are current time + 3 adjacent hours look-aheads in guide page matrix.
Pages are constantly broadcast .

Demandcast Pages = 30 pages.
Pages are anywhere in guide page matrix beyond constantly broadcast pages.

# of pages in broadcast = # of constant broadcast pages + # of demandcast pages

# of constant broadcast pages = (# of pages per time slot) x (# of time slots in constant broadcast)

Fig. 8

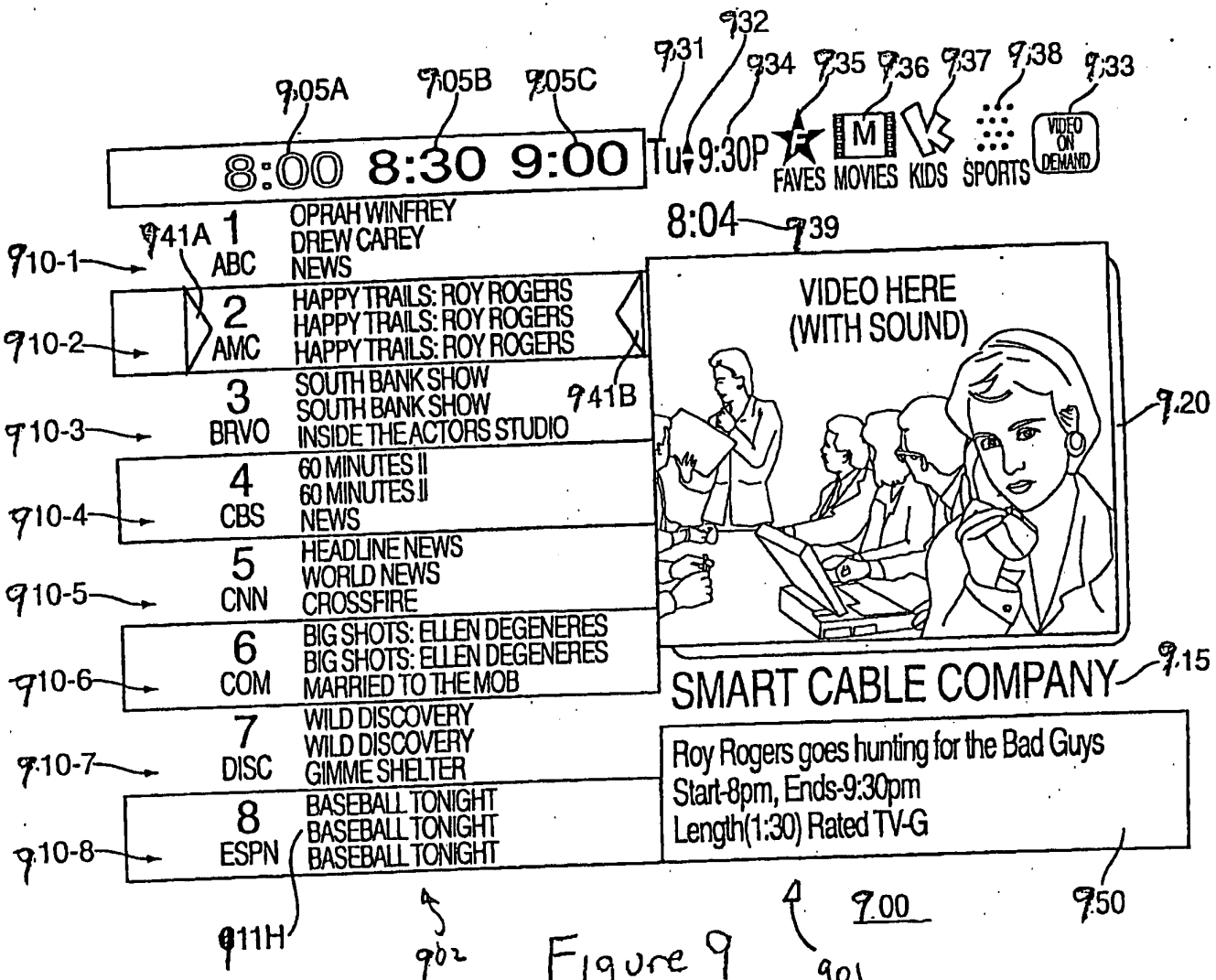

905A
905B
905C
931
932
934
935
936
937
938
933
8:00 8:30 9:00
Tu 9:30P
FAVES
MOVIES
KIDS
SPORTS
VIDEO ON DEMAND
8:04
939
941A
910-1
1 ABC OPRAH WINFREY DREW CAREY NEWS
910-2
2 AMC HAPPY TRAILS: ROY ROGERS HAPPY TRAILS: ROY ROGERS HAPPY TRAILS: ROY ROGERS
941B
910-3
3 BRVO SOUTH BANK SHOW SOUTH BANK SHOW INSIDE THE ACTORS STUDIO
910-4
4 CBS 60 MINUTES II 60 MINUTES II NEWS
910-5
5 CNN HEADLINE NEWS WORLD NEWS CROSSFIRE
910-6
6 COM BIG SHOTS: ELLEN DEGENERES BIG SHOTS: ELLEN DEGENERES MARRIED TO THE MOB
910-7
7 DISC WILD DISCOVERY WILD DISCOVERY GIMME SHELTER
910-8
8 ESPN BASEBALL TONIGHT BASEBALL TONIGHT BASEBALL TONIGHT
911H
902
VIDEO HERE (WITH SOUND)
920
SMART CABLE COMPANY
915
Roy Rogers goes hunting for the Bad Guys
Start-8pm, Ends-9:30pm
Length(1:30) Rated TV-G
950
900
901

Figure 9

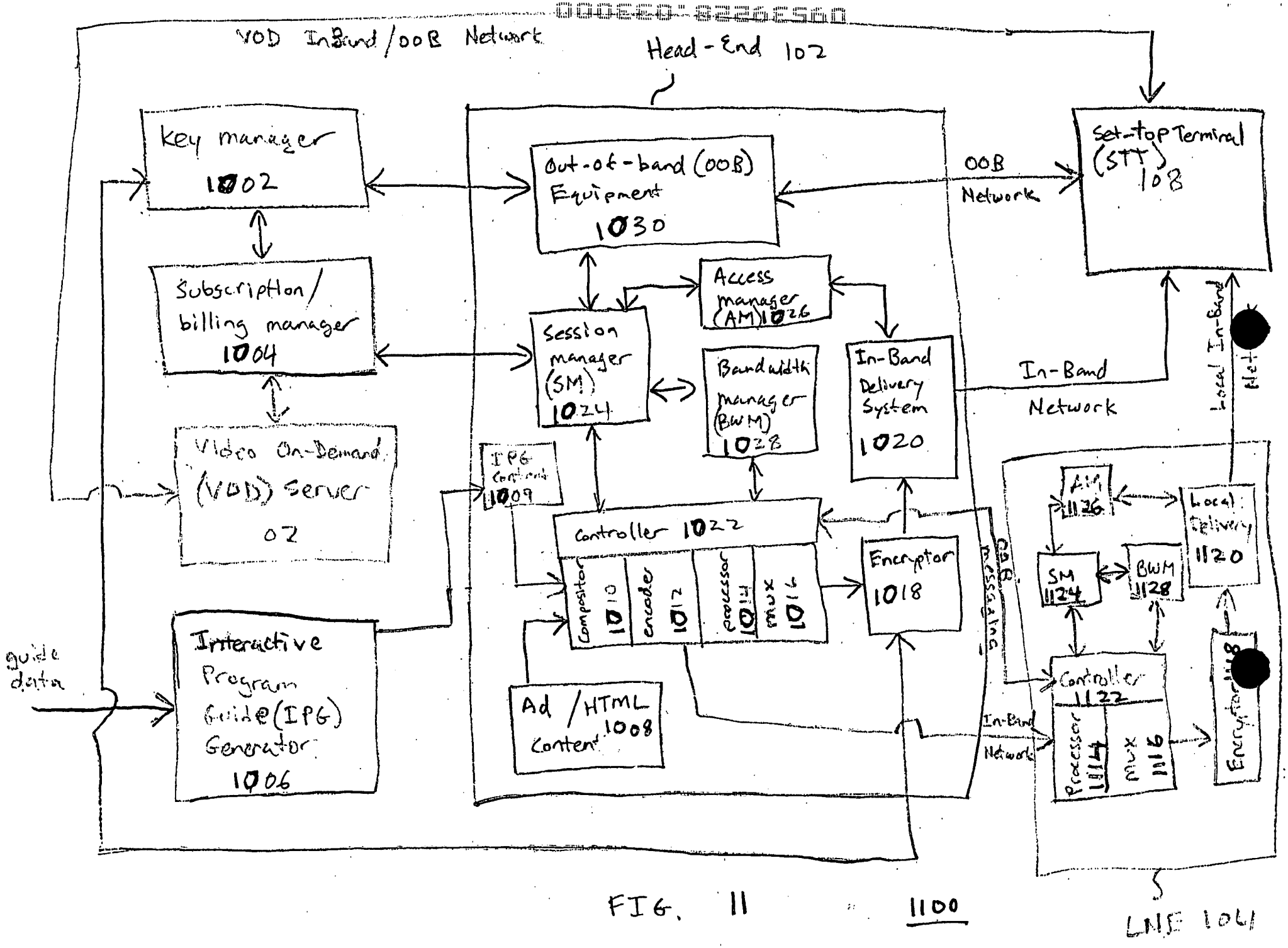

VOD InBand/OOB Network
Head-End 102
Key manager 1002
Subscription/billing manager 1004
Video On-Demand (VOD) Server 07
Interactive Program Guide (IPG) Generator 1006
guide data
Out-of-band (OOB) Equipment 1030
Session manager (SM) 1024
Access manager (AM) 1026
Bandwidth manager (BWM) 1028
In-Band Delivery System 1020
IPG content 1009
Controller 1022
Compositor 1010
encoder 1012
processor 1014
mux 1016
Encryptor 1018
Ad/HTML content 1008
OOB messaging
OOB Network
Set-top Terminal (STT) 108
In-Band Network
Local In-Band Net
AM 1126
Local Delivery 1120
SM 1124
BWM 1128
Controller 1122
Processor 1114
mux 1116
Encryptor 1118
In-Band Network
LNE 1041

FIG. 11 1100

0000CE0" 82206E960

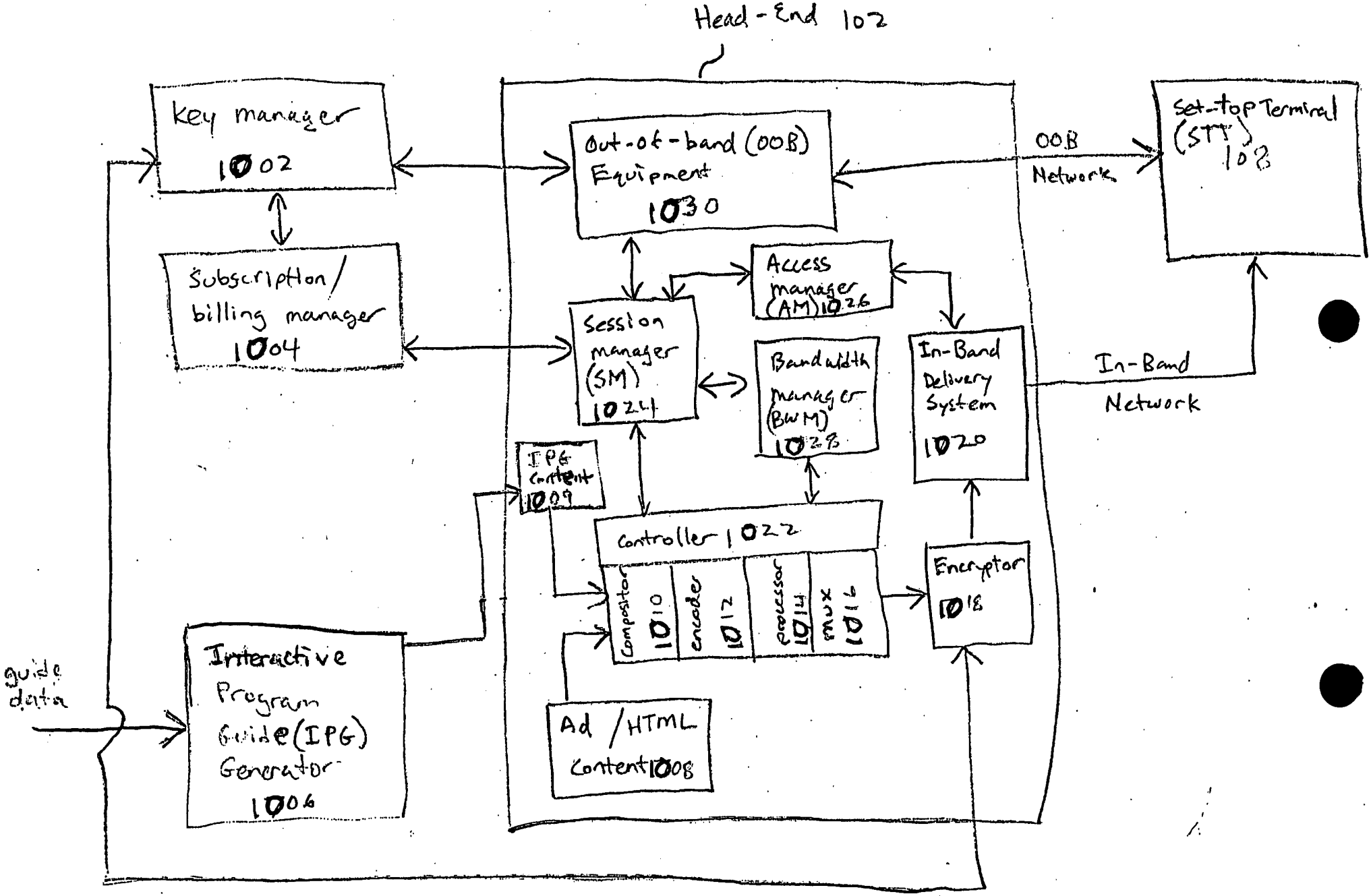


FIG. 10

1000

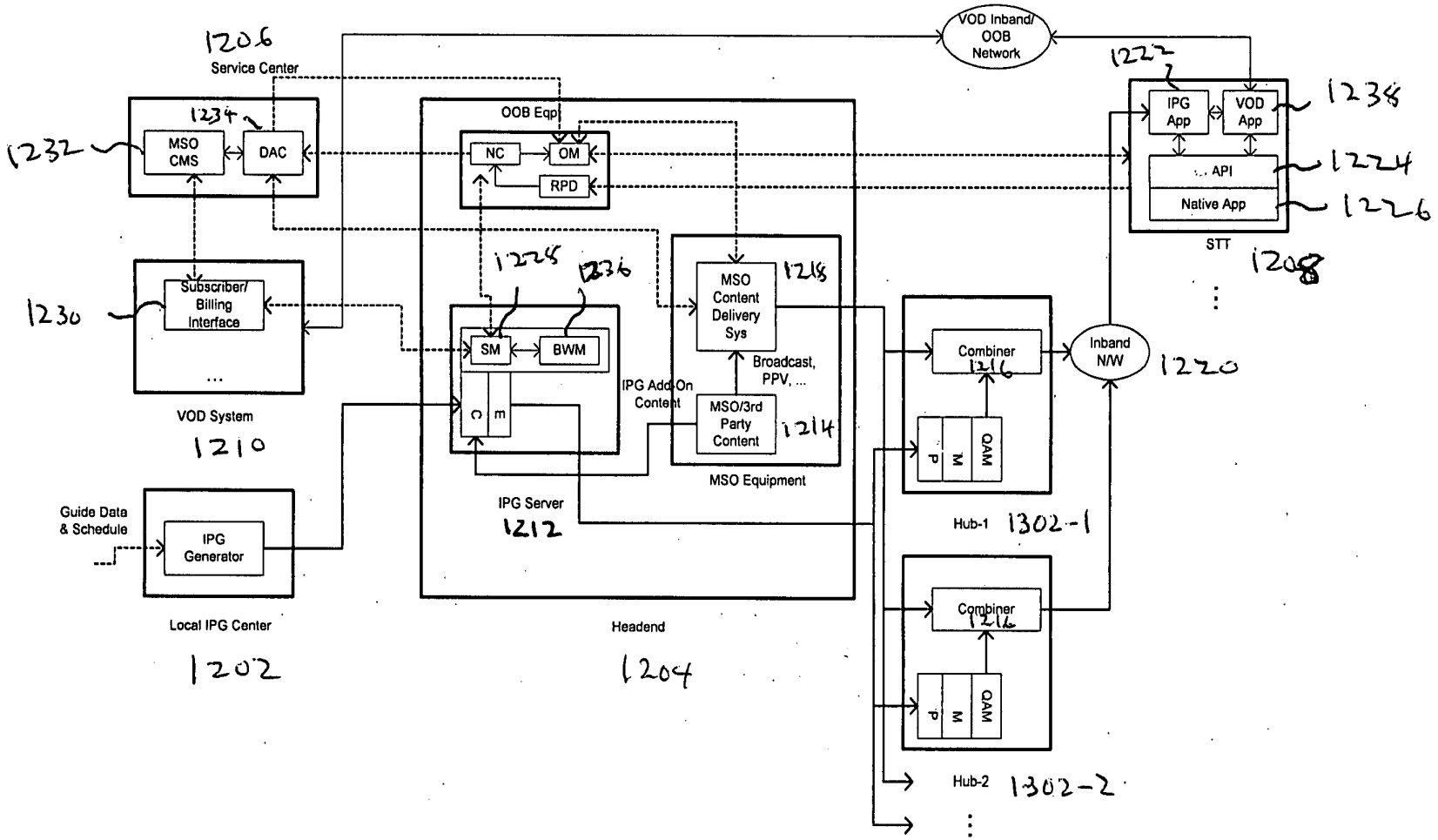

1206
Service Center
VOD Inband/
OOB
Network
1222
1234
1232
MSO
CMS
DAC
OOB Eqp
NC
OM
RPD
IPG
App
VOD
App
API
Native App
1224
1226
STT
1208
1230
Subscriber/
Billing
Interface
1225
1236
SM
BWM
C
m
MSO
Content
Delivery
Sys
1218
Broadcast,
PPV, ...
IPG Add-On
Content
MSO/3rd
Party
Content
1214
MSO Equipment
VOD System
1210
IPG Server
1212
Combiner
1216
P
M
QAM
Inband
N/W
1220
Hub-1
1302-1
Guide Data
& Schedule
IPG
Generator
Local IPG Center
1202
Headend
1204
Combiner
1216
Hub-2
1302-2

Fig. 13

1300

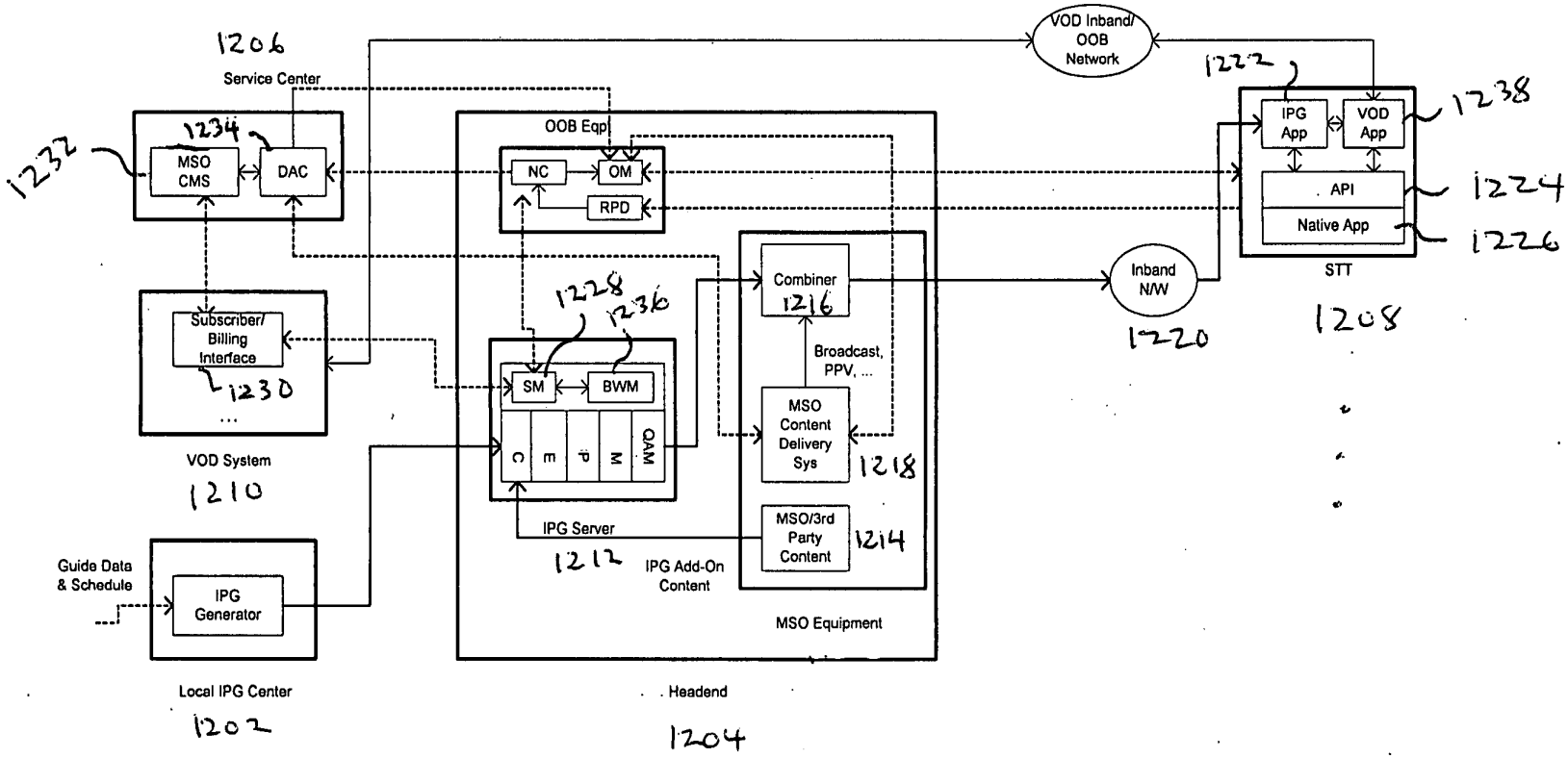

1206
Service Center
1234
MSO CMS
DAC
1232
Subscriber/ Billing Interface
1230
VOD System
1210
Guide Data & Schedule
IPG Generator
Local IPG Center
1202
OOB Eqp
NC
OM
RPD
1228
1236
SM
BWM
C
m
d
M
QAM
IPG Server
1212
IPG Add-On Content
Combiner
1216
Broadcast, PPV, ...
MSO Content Delivery Sys
1218
MSO/3rd Party Content
1214
MSO Equipment
Headend
1204
VOD Inband/ OOB Network
1222
IPG App
VOD App
1238
API
1224
Native App
1226
STT
1208
Inband N/W
1220

Fig. 12

1200

TSG-to-Terminal Communication:

Contents of Demand-Cast Index Table

table version number (incremented when table content changes)
list of available demand-cast streams
IP address for the source TSG
MUX channel number within the source TSG
time of day and day of week

Fig. 14

Terminal-to-SM Communication:

Message Content

demand-cast stream ID
terminal ID
IP address for the source TSG
MUX channel number within the source TSG
message information (acquisition, release, or request)

Fig. 15

SM to-TSG Communication:

Message Content

demand-cast stream ID
MUX channel number within the source TSG
message/command (stream released, stream requested, or reset)

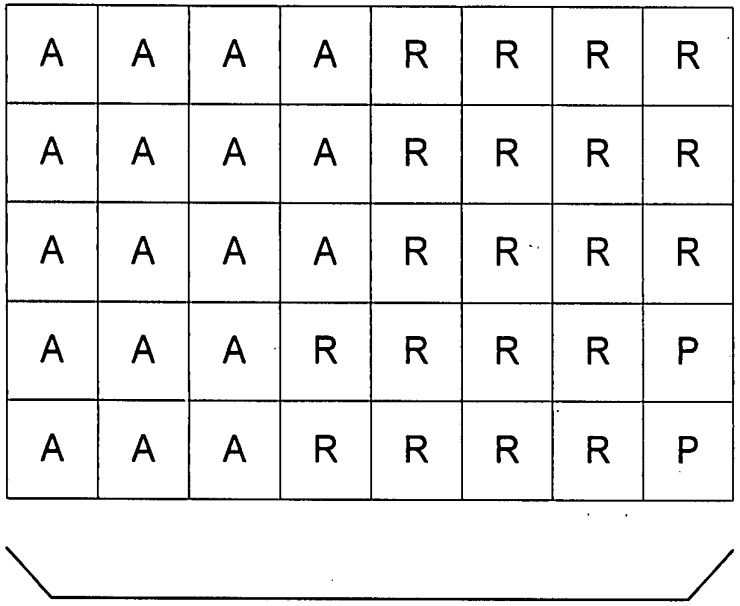
Fig. 16

TSG-to-SM Communication:

Message Content

demand-cast stream ID
MUX channel number within the source TSG
IP address for the source TSG
acknowledgment (of stream release, of stream request, or of reset)

Fig. 17



A: acquired streams are in mux and in demand-cast index table

R: released streams are in mux and in demand-cast index table. They can be turned into passive streams.

P: passive streams are technically released. They are not in the demand-cast index table. They are removable.

TSG Demand-cast Stream Status

Fig. 18

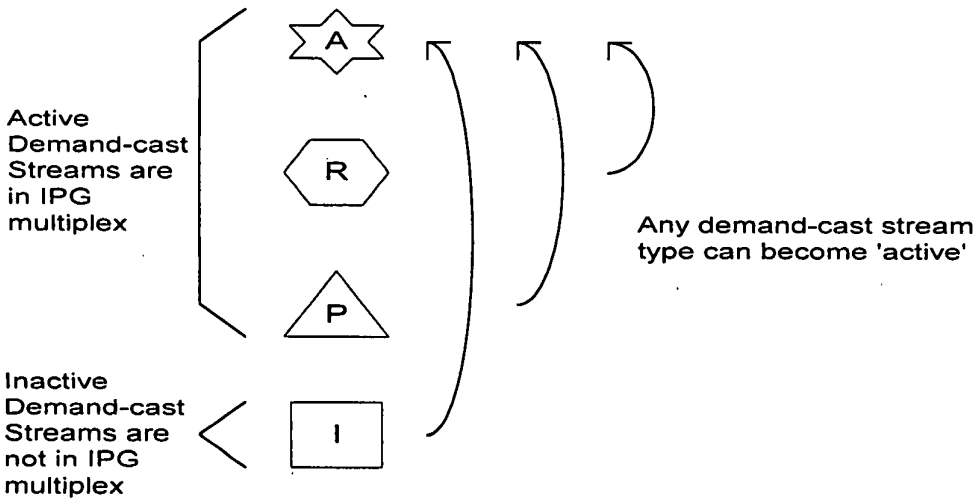

A
R
P
I
Active Demand-cast Streams are in IPG multiplex
Inactive Demand-cast Streams are not in IPG multiplex
Any demand-cast stream type can become 'active'

Fig. 19

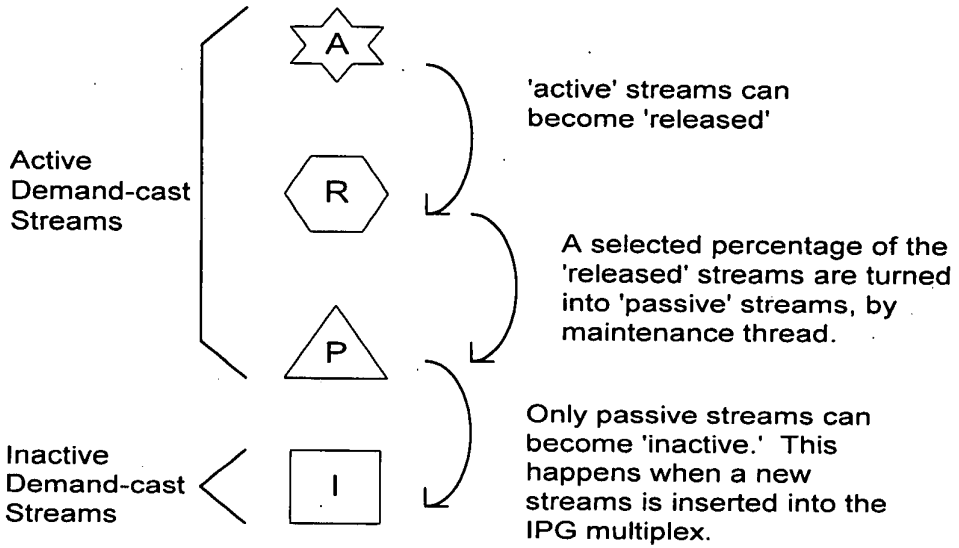

A
R
P
I
Active
Demand-cast
Streams
Inactive
Demand-cast
Streams
'active' streams can become 'released'
A selected percentage of the 'released' streams are turned into 'passive' streams, by maintenance thread.
Only passive streams can become 'inactive.' This happens when a new streams is inserted into the IPG multiplex.

Fig. 20